



SEQUENCE LISTING

<110> Altmann, Scott W

Wang, Luquan

Graziano, Michael

Murgolo, Nick

<120> NPC1L1 (NPC3) AND METHODS OF USE THEREOF

<130> JB01603-K-US

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<151> 2002-07-19

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<213> Rattus sp.

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Leu Thr Val Leu Ala Leu Ser Phe Ile Val Val Ile Ala Leu Ala Ala  
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Gly Leu Thr Phe Ile Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser  
 370 375 380

Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ser Phe His Asp Glu His  
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Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Arg Asn  
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Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Ser Lys Asn Phe  
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Ser Gly Ile Leu Ser Leu Asp Phe Leu Leu Glu Leu Leu Glu Leu Gln  
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Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Glu Arg Asn  
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Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Tyr Asn Thr  
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Ser Leu Ser Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn  
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Asn Arg Thr Leu Leu Met Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln  
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Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala  
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Pro Leu Thr Phe Lys Asp Gly Thr Ser Leu Ala Leu Ser Cys Met Ala  
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Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln  
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Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Leu

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Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala Gln Ala Lys Leu Trp		
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Glu Glu Ala Phe Leu Lys Glu Met Glu Ser Phe Gln Arg Asn Thr Ser		
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Asp Lys Phe Gln Val Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu		
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Ile Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg		
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Cys Ser Arg Val Ala Val Glu Ser Lys Ala Thr Leu Gly Leu Gly Gly		
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Val Ile Val Val Leu Gly Ala Val Leu Ala Ala Met Gly Phe Tyr Ser		
	675	680
Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe		
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Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu		
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Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile		
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Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu		
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Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala		
	755	760
Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Leu Asp Phe		
	770	775
Leu Leu Gln Met Thr Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys		
785	790	795
Arg Gln Glu Ala Ser Arg Pro Asp Val Leu Cys Cys Phe Ser Thr Arg		
	805	810
		815

Lys Leu Pro Pro Pro Lys Glu Lys Glu Gly Leu Leu Leu Arg Phe Phe  
820 825 830

Arg Lys Ile Tyr Ala Pro Phe Leu Leu His Arg Phe Ile Arg Pro Val  
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Val Met Leu Leu Phe Leu Thr Leu Phe Gly Ala Asn Leu Tyr Leu Met  
850 855 860

Cys Asn Ile Asn Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp  
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Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val  
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Gly Pro Pro Val Tyr Phe Val Thr Thr Ser Gly Phe Asn Phe Ser Ser  
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Glu Ala Gly Met Asn Ala Thr Cys Ser Ser Ala Gly Cys Lys Ser Phe  
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Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asp Gln Ser  
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Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp  
945 950 955 960

Leu Thr Pro Ser Ser Ser Cys Cys Arg Leu Tyr Ile Arg Gly Pro His  
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Lys Asp Glu Phe Cys Pro Ser Thr Asp Thr Ser Phe Asn Cys Leu Lys  
980 985 990

Asn Cys Met Asn Arg Thr Leu Gly Pro Val Arg Pro Thr Ala Glu Gln  
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Phe His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Pro Pro Asn Ile  
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Arg Cys Pro Lys Gly Gly Leu Ala Ala Tyr Arg Thr Ser Val Asn  
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Leu Ser Ser Asp Gly Gln Val Ile Ala Ser Gln Phe Met Ala Tyr  
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Ser	Asn	Val	Phe	Tyr	Gln	Gln	Tyr	Leu	Thr	Val	Leu	Pro	Glu	Gly
	1100					1105					1110			
Ile	Phe	Thr	Leu	Ala	Leu	Cys	Phe	Val	Pro	Thr	Phe	Val	Val	Cys
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Tyr	Leu	Leu	Leu	Gly	Leu	Asp	Met	Cys	Ser	Gly	Ile	Leu	Asn	Leu
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Leu	Ser	Ile	Ile	Met	Ile	Leu	Val	Asp	Thr	Ile	Gly	Leu	Met	Ala
	1145					1150					1155			
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Thr	Ala	Val	Gly	Met	Ser	Val	Glu	Phe	Val	Ser	His	Ile	Thr	Arg
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Asp	Ala	Thr	Val	Phe	Met	Gly	Ser	Ala	Val	Phe	Ala	Gly	Val	Ala
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Met	Thr	Asn	Phe	Pro	Gly	Ile	Leu	Ile	Leu	Gly	Phe	Ala	Gln	Ala
	1220					1225					1230			
Gln	Leu	Ile	Gln	Ile	Phe	Phe	Phe	Arg	Leu	Asn	Leu	Leu	Ile	Thr
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	1250					1255					1260			
Ser	Tyr	Leu	Gly	Pro	Asp	Val	Asn	Gln	Ala	Leu	Val	Gln	Glu	Glu
	1265					1270					1275			

Lys Leu Ala Ser Glu Ala Ala Val Ala Pro Glu Pro Ser Cys Pro  
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Gln Tyr Pro Ser Pro Ala Asp Ala Asp Ala Asn Val Asn Tyr Gly  
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 cgc ttg gcc cag agt gag cct tac aca acc atc cac cag cct ggc tac 96  
 Arg Leu Ala Gln Ser Glu Pro Tyr Thr Thr Ile His Gln Pro Gly Tyr  
 20 25 30  
 tgc gcc ttc tat gac gaa tgt ggg aag aac cca gag ctg tct gga agc 144  
 Cys Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser  
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 Leu Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg  
 50 55 60  
 aag atc aca ggt gat cac ctg atc cta tta cag aag atc tgc ccc cgc 240  
 Lys Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg  
 65 70 75 80  
 ctc tac acc ggc ccc aac acc caa gcc tgc tgc tcc gcc aag cag ctg 288  
 Leu Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu  
 85 90 95

gta tca ctg gaa gcg agt ctg tcg atc acc aag gcc ctc ctc acc cgc	336
Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg	
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tgc cca gcc tgc tct gac aat ttt gtg aac ctg cac tgc cac aac acg	384
Cys Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr	
115 120 125	
tgc agc ccc aat cag agc ctc ttc atc aat gtg acc cgc gtg gcc cag	432
Cys Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln	
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cta ggg gct gga caa ctc cca gct gtg gtg gcc tat gag gcc ttc tac	480
Leu Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr	
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Gln His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg	
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gtc cct gca gct gcc acg ctg gct gtg ggc acc atg tgt ggc gtg tat	576
Val Pro Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr	
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Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp	
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aca ggc aat ggt ctg gcc cca ctg gac atc acc ttc cac ctc ttg gag	672
Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu	
210 215 220	
cct ggc cag gcc gtg ggg agt ggg att cag cct ctg aat gag ggg gtt	720
Pro Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val	
225 230 235 240	
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Ala Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys	
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Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu	
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Asp Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile	
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Ile Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly	
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Phe Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys	
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Lys Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu	
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Leu	Gly	Gln	Phe	Phe	Gln	Gly	Trp	Gly	Thr	Trp	Val	Ala	Ser	Trp	Pro		
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Leu	Thr	Ile	Leu	Val	Leu	Ser	Val	Ile	Pro	Val	Val	Ala	Leu	Ala	Ala		
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ggc	ctg	gtc	ttt	aca	gaa	ctc	act	acg	gac	ccc	gtg	gag	ctg	tgg	tcg	1152	
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gcc	ccc	aac	agc	caa	gcc	cgg	agt	gag	aaa	gct	ttc	cat	gac	cag	cat	1200	
Ala	Pro	Asn	Ser	Gln	Ala	Arg	Ser	Glu	Lys	Ala	Phe	His	Asp	Gln	His		
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Phe	Gly	Pro	Phe	Phe	Arg	Thr	Asn	Gln	Val	Ile	Leu	Thr	Ala	Pro	Asn		
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cgg	tcc	agc	tac	agg	tat	gac	tct	ctg	ctg	ctg	ggg	ccc	aag	aac	ttc	1296	
Arg	Ser	Ser	Tyr	Arg	Tyr	Asp	Ser	Leu	Leu	Leu	Gly	Pro	Lys	Asn	Phe		
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agc	gga	atc	ctg	gac	ctg	gac	ttg	ctg	ctg	gag	ctg	cta	gag	ctg	cag	1344	
Ser	Gly	Ile	Leu	Asp	Leu	Asp	Leu	Leu	Leu	Glu	Leu	Leu	Glu	Leu	Gln		
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gag	agg	ctg	cgg	cac	ctc	cag	gta	tgg	tcg	ccc	gaa	gca	cag	cgc	aac	1392	
Glu	Arg	Leu	Arg	His	Leu	Gln	Val	Trp	Ser	Pro	Glu	Ala	Gln	Arg	Asn		
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Ile	Ser	Leu	Gln	Asp	Ile	Cys	Tyr	Ala	Pro	Leu	Asn	Pro	Asp	Asn	Thr		
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agt	ctc	tac	gac	tgc	tgc	atc	aac	agc	ctc	ctg	cag	tat	ttc	cag	aac	1488	
Ser	Leu	Tyr	Asp	Cys	Cys	Ile	Asn	Ser	Leu	Leu	Gln	Tyr	Phe	Gln	Asn		
			485					490				495					
aac	cgc	acg	ctc	ctg	ctg	ctc	aca	gcc	aac	cag	aca	ctg	atg	ggg	cag	1536	
Asn	Arg	Thr	Leu	Leu	Leu	Leu	Thr	Ala	Asn	Gln	Thr	Leu	Met	Gly	Gln		
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acc	tcc	caa	gtc	gac	tgg	aag	gac	cat	ttt	ctg	tac	tgt	gcc	aat	gcc	1584	
Thr	Ser	Gln	Val	Asp	Trp	Lys	Asp	His	Phe	Leu	Tyr	Cys	Ala	Asn	Ala		
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ccg	ctc	acc	ttc	aag	gat	ggc	aca	gcc	ctg	gcc	ctg	agc	tgc	atg	gct	1632	
Pro	Leu	Thr	Phe	Lys	Asp	Gly	Thr	Ala	Leu	Ala	Leu	Ser	Cys	Met	Ala		
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Glu	Glu	Ala	Phe	Leu	Glu	Glu	Met	Arg	Ala	Phe	Gln	Arg	Arg	Met	Ala	
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Gly	Met	Phe	Gln	Val	Thr	Phe	Thr	Ala	Glu	Arg	Ser	Leu	Glu	Asp	Glu	
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Ile	Asn	Arg	Thr	Thr	Ala	Glu	Asp	Leu	Pro	Ile	Phe	Ala	Thr	Ser	Tyr	
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Ile	Val	Ile	Phe	Leu	Tyr	Ile	Ser	Leu	Ala	Leu	Gly	Ser	Tyr	Ser	Ser	
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tgg	agc	cga	gtg	atg	gtg	gac	tcc	aag	gcc	acg	ctg	ggc	ctc	ggc	ggg	2016
Trp	Ser	Arg	Val	Met	Val	Asp	Ser	Lys	Ala	Thr	Leu	Gly	Leu	Gly	Gly	
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gtg	gcc	gtg	gtc	ctg	gga	gca	gtc	atg	gct	gcc	atg	ggc	ttc	ttc	tcc	2064
Val	Ala	Val	Val	Leu	Gly	Ala	Val	Met	Ala	Ala	Met	Gly	Phe	Phe	Ser	
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Tyr	Leu	Gly	Ile	Arg	Ser	Ser	Leu	Val	Ile	Leu	Gln	Val	Val	Pro	Phe	
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Leu	Val	Leu	Ser	Val	Gly	Ala	Asp	Asn	Ile	Phe	Ile	Phe	Val	Leu	Glu	
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Tyr	Gln	Arg	Leu	Pro	Arg	Arg	Pro	Gly	Glu	Pro	Arg	Glu	Val	His	Ile	
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Gly	Arg	Ala	Leu	Gly	Arg	Val	Ala	Pro	Ser	Met	Leu	Leu	Cys	Ser	Leu	
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Val	Arg	Thr	Phe	Ala	Leu	Thr	Ser	Gly	Leu	Ala	Val	Ile	Leu	Asp	Phe	
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Leu	Leu	Gln	Met	Ser	Ala	Phe	Val	Ala	Leu	Leu	Ser	Leu	Asp	Ser	Lys	
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agg	cag	gag	gcc	tcc	cgg	ttg	gac	gtc	tgc	tgc	tgt	gtc	aag	ccc	cag	2448
Arg	Gln	Glu	Ala	Ser	Arg	Leu	Asp	Val	Cys	Cys	Cys	Val	Lys	Pro	Gln	
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Glu	Leu	Pro	Pro	Pro	Gly	Gln	Gly	Glu	Gly	Leu	Leu	Leu	Gly	Phe	Phe	
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Cys His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp	
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Ser Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val	
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Ser Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser	
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Tyr Leu Ala Ile Pro Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp	
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Leu Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys	
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gac aag ttc tgc ccc tcg acc gtc aac tct ctg aac tgc cta aag aac	2976
Asp Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn	
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Cys Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe	
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His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys	
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tcc att gtc atg atc ctc gtg gac act gtc ggc ttc atg gcc ctg	3474
Ser Ile Val Met Ile Leu Val Asp Thr Val Gly Phe Met Ala Leu	
1145 1150 1155	
tgg gac atc agt tac aat gct gtg tcc ctc atc aac ctg gtc tcg	3519
Trp Asp Ile Ser Tyr Asn Ala Val Ser Leu Ile Asn Leu Val Ser	
1160 1165 1170	
gcg gtg ggc atg tct gtg gag ttt gtg tcc cac att acc cgc tcc	3564
Ala Val Gly Met Ser Val Glu Phe Val Ser His Ile Thr Arg Ser	
1175 1180 1185	
ttt gcc atc agc acc aag ccc acc tgg ctg gag agg gcc aaa gag	3609
Phe Ala Ile Ser Thr Lys Pro Thr Trp Leu Glu Arg Ala Lys Glu	
1190 1195 1200	
gcc acc atc tct atg gga agt gcg gtg ttt gca ggt gtg gcc atg	3654
Ala Thr Ile Ser Met Gly Ser Ala Val Phe Ala Gly Val Ala Met	
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acc aac ctg cct ggc atc ctt gtc ctg ggc ctc gcc aag gcc cag	3699
Thr Asn Leu Pro Gly Ile Leu Val Leu Gly Leu Ala Lys Ala Gln	
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ctc att cag atc ttc ttc ttc cgc ctc aac ctc ctg atc act ctg	3744
Leu Ile Gln Ile Phe Phe Phe Arg Leu Asn Leu Leu Ile Thr Leu	
1235 1240 1245	
ctg ggc ctg ctg cat ggc ttg gtc ttc ctg ccc gtc atc ctc agc	3789
Leu Gly Leu Leu His Gly Leu Val Phe Leu Pro Val Ile Leu Ser	
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tac gtg ggg cct gac gtt aac ccg gct ctg gca ctg gag cag aag	3834
Tyr Val Gly Pro Asp Val Asn Pro Ala Leu Ala Leu Glu Gln Lys	
1265 1270 1275	
cgg gct gag gag gcg gtg gca gca gtc atg gtg gcc tct tgc cca	3879
Arg Ala Glu Glu Ala Val Ala Ala Val Met Val Ala Ser Cys Pro	
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Asn His Pro Ser Arg Val Ser Thr Ala Asp Asn Ile Tyr Val Asn  
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 cac agc ttt gaa ggt tct atc aaa ggt gct ggt gcc atc agc aac 3969  
 His Ser Phe Glu Gly Ser Ile Lys Gly Ala Gly Ala Ile Ser Asn  
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 Lys Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg  
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 Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg  
 100 105 110  
  
 Cys Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr  
 115 120 125  
  
 Cys Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln  
 130 135 140  
  
 Leu Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr

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Gln His Ser Phe	Ala Glu Gln Ser Tyr	Asp Ser Cys Ser Arg	Val Arg			
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Val Pro Ala Ala	Ala Thr Leu Ala	Val Gly Thr Met Cys	Gly Val Tyr			
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Gly Ser Ala Leu	Cys Asn Ala Gln Arg	Trp Leu Asn Phe	Gln Gly Asp			
	195	200	205			
Thr Gly Asn Gly	Leu Ala Pro Leu	Asp Ile Thr Phe	His Leu Leu Glu			
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Pro Gly Gln Ala	Val Gly Ser Gly	Ile Gln Pro Leu	Asn Glu Gly Val			
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Ala Arg Cys Asn	Glu Ser Gln Gly	Asp Asp Val Ala	Thr Cys Ser Cys			
	245	250	255			
Gln Asp Cys Ala	Ala Ser Cys Pro	Ala Ile Ala Arg	Pro Gln Ala Leu			
	260	265	270			
Asp Ser Thr Phe	Tyr Leu Gly Gln	Met Pro Gly Ser	Leu Val Leu Ile			
	275	280	285			
Ile Ile Leu Cys	Ser Val Phe Ala	Val Val Thr Ile	Leu Leu Val Gly			
	290	295	300			
Phe Arg Val Ala	Pro Ala Arg Asp	Lys Ser Lys Met	Val Asp Pro Lys			
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Lys Gly Thr Ser	Leu Ser Asp Lys	Leu Ser Phe Ser	Thr His Thr Leu			
	325	330	335			
Leu Gly Gln Phe	Phe Gln Gly Trp	Gly Thr Trp Val	Ala Ser Trp Pro			
	340	345	350			
Leu Thr Ile Leu	Val Leu Ser Val	Ile Pro Val Val	Ala Leu Ala Ala			
	355	360	365			
Gly Leu Val Phe	Thr Glu Leu Thr	Thr Asp Pro Val	Glu Leu Trp Ser			
	370	375	380			
Ala Pro Asn Ser	Gln Ala Arg Ser	Glu Lys Ala Phe	His Asp Gln His			
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Arg Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe  
420 425 430  
Ser Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln  
435 440 445  
Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn  
450 455 460  
Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr  
465 470 475 480  
Ser Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn  
485 490 495  
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Thr Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala  
515 520 525  
Pro Leu Thr Phe Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Met Ala  
530 535 540  
Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Ile Gly Gly Tyr Lys  
545 550 555 560  
Gly Lys Asp Tyr Ser Glu Ala Glu Ala Leu Ile Met Thr Phe Ser Leu  
565 570 575  
Asn Asn Tyr Pro Ala Gly Asp Pro Arg Leu Ala Gln Ala Lys Leu Trp  
580 585 590  
Glu Glu Ala Phe Leu Glu Glu Met Arg Ala Phe Gln Arg Arg Met Ala  
595 600 605  
Gly Met Phe Gln Val Thr Phe Thr Ala Glu Arg Ser Leu Glu Asp Glu  
610 615 620  
Ile Asn Arg Thr Thr Ala Glu Asp Leu Pro Ile Phe Ala Thr Ser Tyr  
625 630 635 640

Ile Val Ile Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Ser  
 645 650 655

Trp Ser Arg Val Met Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly  
 660 665 670

Val Ala Val Val Leu Gly Ala Val Met Ala Ala Met Gly Phe Phe Ser  
 675 680 685

Tyr Leu Gly Ile Arg Ser Ser Leu Val Ile Leu Gln Val Val Pro Phe  
 690 695 700

Leu Val Leu Ser Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu  
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Tyr Gln Arg Leu Pro Arg Arg Pro Gly Glu Pro Arg Glu Val His Ile  
 725 730 735

Gly Arg Ala Leu Gly Arg Val Ala Pro Ser Met Leu Leu Cys Ser Leu  
 740 745 750

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala  
 755 760 765

Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Val Ile Leu Asp Phe  
 770 775 780

Leu Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys  
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Arg Gln Glu Ala Ser Arg Leu Asp Val Cys Cys Cys Val Lys Pro Gln  
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Glu Leu Pro Pro Pro Gly Gln Gly Glu Gly Leu Leu Leu Gly Phe Phe  
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Gln Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val  
 835 840 845

Val Leu Leu Leu Phe Leu Ala Leu Phe Gly Val Ser Leu Tyr Ser Met  
 850 855 860

Cys His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp  
 865 870 875 880

Ser Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val  
 885 890 895

Gly Ala Pro Val Tyr Phe Val Thr Thr Leu Gly Tyr Asn Phe Ser Ser  
 900 905 910

Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Asn Asn Phe  
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Ser Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser  
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Tyr Leu Ala Ile Pro Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp  
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Leu Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys  
 965 970 975

Asp Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn  
 980 985 990

Cys Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe  
 995 1000 1005

His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys  
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Cys Pro Lys Gly Gly Leu Ala Ala Tyr Ser Thr Ser Val Asn Leu  
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Thr Ser Asp Gly Gln Val Leu Ala Ser Arg Phe Met Ala Tyr His  
 1040 1045 1050

Lys Pro Leu Lys Asn Ser Gln Asp Tyr Thr Glu Ala Leu Arg Ala  
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Ala Arg Glu Leu Ala Ala Asn Ile Thr Ala Asp Leu Arg Lys Val  
 1070 1075 1080

Pro Gly Thr Asp Pro Ala Phe Glu Val Phe Pro Tyr Thr Ile Thr  
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Asn Val Phe Tyr Glu Gln Tyr Leu Thr Ile Leu Pro Glu Gly Leu  
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Phe Met Leu Ser Leu Cys Leu Val Pro Thr Phe Ala Val Ser Cys

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1130	1135	1140		
Ser Ile Val Met Ile Leu	Val Asp Thr Val Gly	Phe Met Ala Leu		
1145	1150	1155		
Trp Asp Ile Ser Tyr Asn	Ala Val Ser Leu Ile	Asn Leu Val Ser		
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Phe Ala Ile Ser Thr Lys	Pro Thr Trp Leu Glu	Arg Ala Lys Glu		
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Thr Asn Leu Pro Gly Ile	Leu Val Leu Gly Leu	Ala Lys Ala Gln		
1220	1225	1230		
Leu Ile Gln Ile Phe Phe	Phe Arg Leu Asn Leu	Leu Ile Thr Leu		
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Leu Gly Leu Leu His Gly	Leu Val Phe Leu Pro	Val Ile Leu Ser		
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Tyr Val Gly Pro Asp Val	Asn Pro Ala Leu Ala	Leu Glu Gln Lys		
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Arg Ala Glu Glu Ala Val	Ala Ala Val Met Val	Ala Ser Cys Pro		
1280	1285	1290		
Asn His Pro Ser Arg Val	Ser Thr Ala Asp Asn	Ile Tyr Val Asn		
1295	1300	1305		
His Ser Phe Glu Gly Ser	Ile Lys Gly Ala Gly	Ala Ile Ser Asn		
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<211> 885

<212> DNA

<213> Rattus sp.

<400> 5

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<210> 6

<211> 458

<212> DNA

<213> Rattus sp.

<400> 6

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<210> 7

<211> 896

<212> DNA

<213> Rattus sp.

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<210> 8

<211> 3124

<212> DNA

<213> Rattus sp.

<400> 8

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<210> 9

<211> 4484

<212> DNA

<213> Rattus sp.

<400> 9

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<213> Rattus sp.

<220>

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<222> (1)..(3993)

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<212> DNA

<213> Mus sp.

<220>

<221> CDS

<222> (1)..(4002)

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Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu	
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aca tca cta tcc aat atc tcc tgc ttg tct aat acc cca gcc cgc cat	192
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Ile Pro Ala Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr	
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Leu	Ile	Val	Phe	Leu	Tyr	Ile	Ser	Leu	Ala	Leu	Gly	Ser	Tyr	Ser	Arg		
				645					650					655			
tgg	agc	cga	gtt	gcg	gtg	gat	tcc	aag	gct	act	ctg	ggc	cta	ggg	ggg	2016	
Trp	Ser	Arg	Val	Ala	Val	Asp	Ser	Lys	Ala	Thr	Leu	Gly	Leu	Gly	Gly		
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Val	Ala	Val	Val	Leu	Gly	Ala	Val	Val	Ala	Ala	Met	Gly	Phe	Tyr	Ser		

675	680	685	
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ctg gtg ctg gct gtg gga gct gac aac atc ttc atc ttt gtt ctt gag Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu 705 710 715 720			2160
tac cag agg ctg cct agg atg ccc ggg gag cag cga gag gct cac att Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile 725 730 735			2208
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gtg agg acc ttt gcc ttg acc tct ggc tta gca atc atc ttt gac ttc Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Phe Asp Phe 770 775 780			2352
ctg ctc cag atg aca gcc ttt gtg gcc ctg ctc tcc ctg gat agc aag Leu Leu Gln Met Thr Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys 785 790 795 800			2400
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aat ctg ccc cca ccg aaa caa aaa gaa ggc ctc tta ctt tgc ttc ttc Asn Leu Pro Pro Pro Lys Gln Lys Glu Gly Leu Leu Leu Cys Phe Phe 820 825 830			2496
cgc aag ata tac act ccc ttc ctg ctg cac aga ttc atc cgc cct gtt Arg Lys Ile Tyr Thr Pro Phe Leu Leu His Arg Phe Ile Arg Pro Val 835 840 845			2544
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tcc tac ctg ata gac tac ttc ctc ttt ctg aac cgg tac ttg gaa gtg Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val 885 890 895			2688
ggg cct cca gtg tac ttt gac acc acc tca ggc tac aac ttt tcc acc Gly Pro Pro Val Tyr Phe Asp Thr Thr Ser Gly Tyr Asn Phe Ser Thr 900 905 910			2736
gag gca ggc atg aac gcc att tgc tct agt gca ggc tgt gag agc ttc Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Glu Ser Phe 915 920 925			2784

tcc cta acc cag aaa atc cag tat gcc agt gaa ttc cct aat cag tct Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asn Gln Ser 930 935 940	2832
tat gtg gct att gct gca tcc tcc tgg gta gat gac ttc atc gac tgg Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp 945 950 955 960	2880
ctg acc cca tcc tcc tcc tgc tgc cgc att tat acc cgt ggc ccc cat Leu Thr Pro Ser Ser Ser Cys Cys Arg Ile Tyr Thr Arg Gly Pro His 965 970 975	2928
aaa gat gag ttc tgt ccc tca acg gat act tcc ttc aac tgt ctc aaa Lys Asp Glu Phe Cys Pro Ser Thr Asp Thr Ser Phe Asn Cys Leu Lys 980 985 990	2976
aac tgc atg aac cgc act ctg ggt ccc gtg aga ccc aca aca gaa cag Asn Cys Met Asn Arg Thr Leu Gly Pro Val Arg Pro Thr Thr Glu Gln 995 1000 1005	3024
ttt cat aag tac ctg ccc tgg ttc ctg aat gat acg ccc aac atc Phe His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Thr Pro Asn Ile 1010 1015 1020	3069
aga tgt cct aaa ggg ggc cta gca gcg tat aga acc tct gtg aat Arg Cys Pro Lys Gly Gly Leu Ala Ala Tyr Arg Thr Ser Val Asn 1025 1030 1035	3114
ttg agc tca gat ggc cag att ata gcc tcc cag ttc atg gcc tac Leu Ser Ser Asp Gly Gln Ile Ile Ala Ser Gln Phe Met Ala Tyr 1040 1045 1050	3159
cac aag ccc tta cgg aac tca cag gac ttt aca gaa gct ctc cgg His Lys Pro Leu Arg Asn Ser Gln Asp Phe Thr Glu Ala Leu Arg 1055 1060 1065	3204
gca tcc cgg ttg cta gca gcc aac atc aca gct gaa cta cgg aag Ala Ser Arg Leu Leu Ala Ala Asn Ile Thr Ala Glu Leu Arg Lys 1070 1075 1080	3249
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ctc tcc atc att atg atc ctc gtg gac acc atc ggc ctc atg gct Leu Ser Ile Ile Met Ile Leu Val Asp Thr Ile Gly Leu Met Ala 1145 1150 1155	3474

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Val Trp Gly Ile Ser Tyr Asn Ala Val Ser Leu Ile Asn Leu Val	
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Thr Ala Val Gly Met Ser Val Glu Phe Val Ser His Ile Thr Arg	
1175 1180 1185	
tcc ttt gct gta agc acc aag cct acc cgg ctg gag aga gcc aaa	3609
Ser Phe Ala Val Ser Thr Lys Pro Thr Arg Leu Glu Arg Ala Lys	
1190 1195 1200	
gat gct act atc ttc atg ggc agt gcg gtg ttt gct gga gtg gcc	3654
Asp Ala Thr Ile Phe Met Gly Ser Ala Val Phe Ala Gly Val Ala	
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atg acc aac ttc ccg ggc atc ctc atc ctg ggc ttt gct cag gcc	3699
Met Thr Asn Phe Pro Gly Ile Leu Ile Leu Gly Phe Ala Gln Ala	
1220 1225 1230	
cag ctt atc cag att ttc ttc ttc cgc ctc aac ctc ctg atc acc	3744
Gln Leu Ile Gln Ile Phe Phe Phe Arg Leu Asn Leu Leu Ile Thr	
1235 1240 1245	
ttg ctg ggt ctg cta cac ggc ctg gtc ttc ctg ccc gtt gtc ctc	3789
Leu Leu Gly Leu Leu His Gly Leu Val Phe Leu Pro Val Val Leu	
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Ser Tyr Leu Gly Pro Asp Val Asn Gln Ala Leu Val Leu Glu Glu	
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Lys Leu Ala Thr Glu Ala Ala Met Val Ser Glu Pro Ser Cys Pro	
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Gln Tyr Pro Phe Pro Ala Asp Ala Asn Thr Ser Asp Tyr Val Asn	
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Tyr Gly Phe Asn Pro Glu Phe Ile Pro Glu Ile Asn Ala Ala Ser	
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<211> 1333

<212> PRT

<213> Mus sp.

<400> 12

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 Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu  
 35 40 45  
 Thr Ser Leu Ser Asn Ile Ser Cys Leu Ser Asn Thr Pro Ala Arg His  
 50 55 60  
 Val Thr Gly Asp His Leu Ala Leu Leu Gln Arg Val Cys Pro Arg Leu  
 65 70 75 80  
 Tyr Asn Gly Pro Asn Asp Thr Tyr Ala Cys Cys Ser Thr Lys Gln Leu  
 85 90 95  
 Val Ser Leu Asp Ser Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg  
 100 105 110  
 Cys Pro Ala Cys Ser Glu Asn Phe Val Ser Ile His Cys His Asn Thr  
 115 120 125  
 Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Gln  
 130 135 140  
 Arg Asp Pro Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr  
 145 150 155 160  
 Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Arg Val Arg  
 165 170 175  
 Ile Pro Ala Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr  
 180 185 190  
 Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp  
 195 200 205  
 Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu  
 210 215 220  
 Pro Gly Gln Ala Leu Ala Asp Gly Met Lys Pro Leu Asp Gly Lys Ile  
 225 230 235 240  
 Thr Pro Cys Asn Glu Ser Gln Gly Glu Asp Ser Ala Ala Cys Ser Cys



245								250					255				
Gln	Asp	Cys	Ala	Ala	Ser	Cys	Pro	Val	Ile	Pro	Pro	Pro	Pro	Ala	Leu		
			260				265						270				
Arg	Pro	Ser	Phe	Tyr	Met	Gly	Arg	Met	Pro	Gly	Trp	Leu	Ala	Leu	Ile		
			275				280						285				
Ile	Ile	Phe	Thr	Ala	Val	Phe	Val	Leu	Leu	Ser	Val	Val	Leu	Val	Tyr		
			290				295						300				
Leu	Arg	Val	Ala	Ser	Asn	Arg	Asn	Lys	Asn	Lys	Thr	Ala	Gly	Ser	Gln		
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Glu	Ala	Pro	Asn	Leu	Pro	Arg	Lys	Arg	Arg	Phe	Ser	Pro	His	Thr	Val		
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Leu	Thr	Val	Leu	Ala	Leu	Ser	Phe	Ile	Val	Val	Ile	Ala	Leu	Ser	Val		
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Gly	Leu	Thr	Phe	Ile	Glu	Leu	Thr	Thr	Asp	Pro	Val	Glu	Leu	Trp	Ser		
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Ala	Pro	Lys	Ser	Gln	Ala	Arg	Lys	Glu	Lys	Ala	Phe	His	Asp	Glu	His		
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Phe	Gly	Pro	Phe	Phe	Arg	Thr	Asn	Gln	Ile	Phe	Val	Thr	Ala	Lys	Asn		
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Arg	Ser	Ser	Tyr	Lys	Tyr	Asp	Ser	Leu	Leu	Leu	Gly	Pro	Lys	Asn	Phe		
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Glu	Arg	Leu	Arg	His	Leu	Gln	Val	Trp	Ser	His	Glu	Ala	Gln	Arg	Asn		
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Ile	Ser	Leu	Gln	Asp	Ile	Cys	Tyr	Ala	Pro	Leu	Asn	Pro	His	Asn	Thr		
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			485						490						495		

Asn His Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln  
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Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala  
 515 520 525

Pro Leu Thr Tyr Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Ile Ala  
 530 535 540

Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln  
 545 550 555 560

Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Ile  
 565 570 575

Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala His Ala Lys Leu Trp  
 580 585 590

Glu Glu Ala Phe Leu Lys Glu Met Gln Ser Phe Gln Arg Ser Thr Ala  
 595 600 605

Asp Lys Phe Gln Ile Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu  
 610 615 620

Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Ile Ser Tyr  
 625 630 635 640

Leu Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg  
 645 650 655

Trp Ser Arg Val Ala Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly  
 660 665 670

Val Ala Val Val Leu Gly Ala Val Val Ala Ala Met Gly Phe Tyr Ser  
 675 680 685

Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe  
 690 695 700

Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu  
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Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile  
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Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu  
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Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Ser Met Pro Ala  
 755 760 765

Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Phe Asp Phe  
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Leu Leu Gln Met Thr Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys  
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Arg Gln Glu Ala Ser Arg Pro Asp Val Val Cys Cys Phe Ser Ser Arg  
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Asn Leu Pro Pro Pro Lys Gln Lys Glu Gly Leu Leu Leu Cys Phe Phe  
 820 825 830

Arg Lys Ile Tyr Thr Pro Phe Leu Leu His Arg Phe Ile Arg Pro Val  
 835 840 845

Val Leu Leu Leu Phe Leu Val Leu Phe Gly Ala Asn Leu Tyr Leu Met  
 850 855 860

Cys Asn Ile Ser Val Gly Leu Asp Gln Asp Leu Ala Leu Pro Lys Asp  
 865 870 875 880

Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val  
 885 890 895

Gly Pro Pro Val Tyr Phe Asp Thr Thr Ser Gly Tyr Asn Phe Ser Thr  
 900 905 910

Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Glu Ser Phe  
 915 920 925

Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asn Gln Ser  
 930 935 940

Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp  
 945 950 955 960

Leu Thr Pro Ser Ser Ser Cys Cys Arg Ile Tyr Thr Arg Gly Pro His  
 965 970 975

Lys Asp Glu Phe Cys Pro Ser Thr Asp Thr Ser Phe Asn Cys Leu Lys  
980 985 990

Asn Cys Met Asn Arg Thr Leu Gly Pro Val Arg Pro Thr Thr Glu Gln  
995 1000 1005

Phe His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Thr Pro Asn Ile  
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Arg Cys Pro Lys Gly Gly Leu Ala Ala Tyr Arg Thr Ser Val Asn  
1025 1030 1035

Leu Ser Ser Asp Gly Gln Ile Ile Ala Ser Gln Phe Met Ala Tyr  
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His Lys Pro Leu Arg Asn Ser Gln Asp Phe Thr Glu Ala Leu Arg  
1055 1060 1065

Ala Ser Arg Leu Leu Ala Ala Asn Ile Thr Ala Glu Leu Arg Lys  
1070 1075 1080

Val Pro Gly Thr Asp Pro Asn Phe Glu Val Phe Pro Tyr Thr Ile  
1085 1090 1095

Ser Asn Val Phe Tyr Gln Gln Tyr Leu Thr Val Leu Pro Glu Gly  
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Ile Phe Thr Leu Ala Leu Cys Phe Val Pro Thr Phe Val Val Cys  
1115 1120 1125

Tyr Leu Leu Leu Gly Leu Asp Ile Arg Ser Gly Ile Leu Asn Leu  
1130 1135 1140

Leu Ser Ile Ile Met Ile Leu Val Asp Thr Ile Gly Leu Met Ala  
1145 1150 1155

Val Trp Gly Ile Ser Tyr Asn Ala Val Ser Leu Ile Asn Leu Val  
1160 1165 1170

Thr Ala Val Gly Met Ser Val Glu Phe Val Ser His Ile Thr Arg  
1175 1180 1185

Ser Phe Ala Val Ser Thr Lys Pro Thr Arg Leu Glu Arg Ala Lys  
1190 1195 1200

Asp Ala Thr Ile Phe Met Gly Ser Ala Val Phe Ala Gly Val Ala

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Met Thr Asn Phe Pro Gly Ile 1220	Leu Ile Leu Gly Phe 1225	Ala Gln Ala 1230
Gln Leu Ile Gln Ile Phe 1235	Phe Phe Arg Leu Asn 1240	Leu Leu Ile Thr 1245
Leu Leu Gly Leu Leu His 1250	Gly Leu Val Phe Leu 1255	Pro Val Val Leu 1260
Ser Tyr Leu Gly Pro Asp 1265	Val Asn Gln Ala Leu 1270	Val Leu Glu Glu 1275
Lys Leu Ala Thr Glu Ala 1280	Ala Met Val Ser Glu 1285	Pro Ser Cys Pro 1290
Gln Tyr Pro Phe Pro Ala 1295	Asp Ala Asn Thr Ser 1300	Asp Tyr Val Asn 1305
Tyr Gly Phe Asn Pro Glu 1310	Phe Ile Pro Glu Ile 1315	Asn Ala Ala Ser 1320
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<220>

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<222> (1)..(3999)

<223> n is g or a or t or c

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Ala Glu Ala Gly Leu Arg Gly Trp Leu Leu Trp Ala Leu Leu Leu Arg
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Leu Ala Gln Ser Glu Pro Tyr Thr Thr Ile His Gln Pro Gly Tyr Cys
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gcc ttc tat gac gaa tgt ggg aag aac cca gag ctg tct gga agc ctc      203
Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser Leu
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atg aca ctc tcc aac gtg tcc tgc ctg tcc aac acg ccg gcc cgc aag      251
Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg Lys
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Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg Leu
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tac acc ggc ccc aac acc caa gcc tgc tgc tcc gcc aag cag ctg gta      347
Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu Val
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tca ctg gaa gcg agt ctg tcg atc acc aag gcc ctc ctc acc cgc tgc      395
Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg Cys
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cca gcc tgc tct gac aat ttt gtg aac ctg cac tgc cac aac acg tgc      443
Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr Cys
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Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln Leu
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Ile	Leu	Cys	Ser	Val	Phe	Ala	Val	Val	Thr	Ile	Leu	Leu	Val	Gly	Phe	
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Arg	Val	Ala	Pro	Ala	Arg	Asp	Lys	Ser	Lys	Met	Val	Asp	Pro	Lys	Lys	
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Pro	Asn	Ser	Gln	Ala	Arg	Ser	Glu	Lys	Ala	Phe	His	Asp	Gln	His	Phe	
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Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe Ser	
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Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln Glu	
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Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn Ile	
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Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr Ser	
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Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn Asn	
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Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala Pro	
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Asn Arg Thr Thr Ala Glu Asp Leu Pro Ile Phe Ala Thr Ser Tyr Ile	
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Leu	Asp	Ser	Ala	Ser	Arg	Phe	Met	Ala	Tyr	His	Lys	Pro	Leu	Lys			
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Asn	Ser	Gln	Asp	Tyr	Thr	Glu	Ala	Leu	Arg	Ala	Ala	Arg	Glu	Leu			
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Ala	Ala	Asn	Ile	Thr	Ala	Asp	Leu	Arg	Lys	Val	Pro	Gly	Thr	Asp			
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Pro	Ala	Phe	Glu	Val	Phe	Pro	Tyr	Thr	Ile	Thr	Asn	Val	Phe	Tyr			

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Glu	Gln Tyr Leu Thr Ile	Leu Pro Glu Gly	Leu	Phe Met Leu Ser	
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ctc	tgc ctt gtg ccc acc	ttc gct gtc tcc	tgc	ctc ctg ctg ggc	3533
Leu	Cys Leu Val Pro Thr	Phe Ala Val Ser	Cys	Leu Leu Leu Gly	
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ctg	gac ctg cgc tcc ggc	ctc ctc aac ctg	ctc	tcc att gtc atg	3578
Leu	Asp Leu Arg Ser Gly	Leu Leu Asn Leu	Leu	Ser Ile Val Met	
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Ile	Leu Val Asp Thr Val	Gly Phe Met Ala	Leu	Trp Gly Ile Ser	
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tac	aat gct gtg tcc ctc	atc aac ctg gtc	tgc	gcg gtg ggc atg	3668
Tyr	Asn Ala Val Ser Leu	Ile Asn Leu Val	Ser	Ala Val Gly Met	
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tct	gtg gag ttt gtg tcc	cac att acc cgc	tcc	ttt gcc atc agc	3713
Ser	Val Glu Phe Val Ser	His Ile Thr Arg	Ser	Phe Ala Ile Ser	
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acc	aag ccc acc tgg ctg	gag agg gcc aaa	gag	gcc acc atc tct	3758
Thr	Lys Pro Thr Trp Leu	Glu Arg Ala Lys	Glu	Ala Thr Ile Ser	
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Met	Gly Ser Ala Val Phe	Ala Gly Val Ala	Met	Thr Asn Leu Pro	
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ggc	atc ctt gtc ctg ggc	ctc gcc aag gcc	cag	ctc att cag atc	3848
Gly	Ile Leu Val Leu Gly	Leu Ala Lys Ala	Gln	Leu Ile Gln Ile	
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ttc	ttc ttc cgc ctc aac	ctc ctg atc act	ctg	ctg ggc ctg ctg	3893
Phe	Phe Phe Arg Leu Asn	Leu Leu Ile Thr	Leu	Leu Gly Leu Leu	
1265		1270		1275	
cat	ggc ttg gtc ttc ctg	ccc gtc atc ctc	agc	tac gtg ggg cct	3938
His	Gly Leu Val Phe Leu	Pro Val Ile Leu	Ser	Tyr Val Gly Pro	
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gac	gtt aac ccg gct ctg	gca ctg gag cag	aag	cgg gct gag gag	3983
Asp	Val Asn Pro Ala Leu	Ala Leu Glu Gln	Lys	Arg Ala Glu Glu	
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Ala	Val Ala Ala Val Met	Val Ala Ser Cys	Pro	Asn His Pro Ser	
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cga	gtc tcc aca gct gac	aac atc tat gtc	aac	cac agc ttt gaa	4073
Arg	Val Ser Thr Ala Asp	Asn Ile Tyr Val	Asn	His Ser Phe Glu	
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Gly	Ser Ile Lys Gly Ala	Gly Ala Ile Ser	Asn	Phe Leu Pro Asn	
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<213> Homo sapiens

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Leu Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg  
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Lys Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg  
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Leu Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu  
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Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg  
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Cys Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr  
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Cys Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln  
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Gln His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg  
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Val Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr  
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Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp  
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Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu  
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Pro Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val  
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Ala Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys  
 245 250 255

Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu  
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Asp Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile  
 275 280 285



Ile Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly  
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 Leu Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala  
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 465 470 475 480  
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 485 490 495  
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 Thr Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala  
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Gly Lys Asp Tyr Ser Glu Ala Glu Ala Leu Ile Met Thr Phe Ser Leu					
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Glu Glu Ala Phe Leu Glu Glu Met Arg Ala Phe Gln Arg Arg Met Ala					
	595		600		605
Gly Met Phe Gln Val Thr Phe Met Ala Glu Arg Ser Leu Glu Asp Glu					
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Trp Ser Arg Val Met Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly					
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Tyr Gln Arg Leu Pro Arg Arg Pro Gly Glu Pro Arg Glu Val His Ile					
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Gly Arg Ala Leu Gly Arg Val Ala Pro Ser Met Leu Leu Cys Ser Leu					
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Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala					
	755		760		765
Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Val Ile Leu Asp Phe					
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Glu Leu Pro Pro Pro Gly Gln Gly Glu Gly Leu Leu Leu Gly Phe Phe  
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Gln Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val  
 835 840 845

Val Leu Leu Leu Phe Leu Ala Leu Phe Gly Val Ser Leu Tyr Ser Met  
 850 855 860

Cys His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp  
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Ser Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val  
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Asp Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn  
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Cys Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe  
 995 1000 1005

His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys  
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1070						1075					1080			
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Pro Asp Val Asn Pro Ala Leu Ala Leu Glu Gln Lys Arg Ala Glu  
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